

## REMARKS

### **I. Introduction**

In response to the Office Action dated October 30, 2007, Applicants have amended claims 1, 2 and 5 and added new claim 33 in order to clarify the subject matter of the present invention. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

### **II. The Rejection Of Claims 1-3, 5, 19-20 And 32 Under 35 U.S.C. § 103**

Claims 1-3, 5, 19-20 and 32 were rejected, under 35 U.S.C. § 103(a), as being unpatentable over Yoneda et al. (USP No. 6,072,239) in view of Ooyama et al. (USP No. 6,191,494). Applicants respectfully traverse this rejection for at least the following reasons.

With regard to the present invention, amended claim 1 recites, in-part, a lead frame comprising: ... a lead having a portion which protrudes from a groove portion laterally onto the surface of a lead frame body so as to be in contact with said surface, wherein the lead includes a barrier layer for suppressing a reaction between the lead frame body and a first conductor layer, the barrier layer being provided on a part of the groove portion so as to be in contact with the lead frame body in the groove portion, and wherein the barrier layer is made of any one of nickel, titanium or tungsten.

In contrast to amended claim 1, Ooyama teach a gold or palladium metal film 28a-1 in Fig. 6. As is disclosed in col. 7, lines 4-22 of Ooyama, the metal film of Ooyama is employed for its conductivity, film strength and bonding ability. As such, Ooyama fails to disclose a barrier layer made of either nickel, titanium or tungsten. Furthermore, the metal film of Ooyama

is not for suppressing a reaction between the lead frame body and the first conductor layer. Moreover, Yoneda fails and is not relied upon to remedy this deficiency. Accordingly, Yoneda and Ooyama, taken alone or in combination with one another, fails to disclose each of the limitations of amended claim 1 of the present disclosure.

Turning to claim 19, claim 19 recites a semiconductor device comprising: a semiconductor chip and a multi-layer lead connected to the semiconductor chip wherein the multi-layer lead contacts a surface of the semiconductor chip.

It is admitted that Yoneda fails to disclose that the multi-layer lead contacts a surface of the semiconductor chip. However, is alleged that Ooyama discloses this feature in that the multi-layer lead 28a and 28b contacts a surface of the semiconductor chip in Fig. 6 of Ooyama. This allegation appears to be incorrect.

As is clearly illustrated in Fig. 6 of Ooyama, the multi-layer lead 28a and 28b is not in contact with the chip 42. Rather, there is a conductive adhesive 29 on the bottom surface of the semiconductor chip 42, which prevents contact of the chip 42 with the leads 28a and 28b. Ooyama further states in col. 6, lines 21-23 that “the semiconductor chip 22 is then mounted on the metal film 28...via the conductive adhesive 29”. Thus, the leads are **not in contact** with the chip in Fig. 6. Furthermore, nowhere in any of the other figures does the multi-layer lead come in contact with the semiconductor chip. As Ooyama fails to disclose this feature, the combination of Yoneda and Ooyama does not render claim 19, or any claims dependent thereon, obvious.

In order to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. At a minimum, as Yoneda and Ooyama fail to teach or suggest a lead frame comprising: ... a lead having a portion which protrudes from

a groove portion laterally onto the surface of a lead frame body so as to be in contact with said surface, wherein the lead includes a barrier layer for suppressing a reaction between the lead frame body and a first conductor layer, the barrier layer being provided on a part of the groove portion so as to be in contact with the lead frame body in the groove portion, and wherein the barrier layer is made of any one of nickel, titanium or tungsten OR a semiconductor device comprising: a semiconductor chip and a multi-layer lead connected to the semiconductor chip wherein the multi-layer lead contacts a surface of the semiconductor chip, it is submitted that Yoneda and Ooyama do not render amended claim 1 or claim 19 obvious. Accordingly, it is respectfully requested that the § 103 rejection of claims 1 and 19 be withdrawn.

**III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1 and 19 are patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

Moreover, as new claim 33 is dependent upon claim 19, which is allowable over the cited prior art for the reasons set forth above, Applicants submit that new claim 33 is also allowable over the cited prior art.

**IV. Conclusion**

Having fully responded to all matters raised in the Office Action, Applicant submits that all claims are in condition for allowance, an indication of which is respectfully solicited.

**Application No.: 10/757,388**

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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